DOCUMENT RESUME

ED 307 892 IR 052 781

AUTHOR Choi, Jin M.; Washington, Nancy
TITLE Learning Styles of Academic Librarians and Implications for Professional Development.
SPONS AGENCY Council on Library Resources, Inc., Washington, D.C.
PUB DATE 88
NOTE 37p.; Paper presented at the Annual Conference of the American Library Association (New Orleans, LA, July 9-14, 1988).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Libraries; *Cognitive Style; Higher Education; Learning Strategies; *Librarians; Library Surveys; *Library Technical Processes; *Professional Development; *Public Service; Questionnaires
IDENTIFIERS *Kolb (David A); *Learning Styles Inventory

ABSTRACT

Characteristics of learning styles and other attributes of academic librarians in public and technical services were examined based on Kolb's Learning Style Inventory (LSI), a system that conceptualizes the learning process as a four-stage cycle and identifies four different learning styles--accommodator (gets things done, takes risk, leads); diverger (has imagination, understands people, can brainstorm); converger (problem solves, defines problems, reasons deductively); and assimilator (plans, defines problems, develops theories). Survey instruments were distributed to 200 librarians working in technical services and public services--100 in each group--in 20 member libraries of the Association of Research Libraries (ARL). Out of 148 returns, 73 (52%) were from technical services and 67 (48%) were from public services. The most common learning style among the librarians surveyed was found to be the assimilator (38.6%), followed by the converger (27.1%), the diverger (19.3%), and the accommodator (15%). These findings suggest that academic librarians prefer or have strengths in abstract conceptualizations. Neither group showed significant statistical differences in their learning style distributions, nor were differences found among learning styles in terms of gender, age group, length of experience, or undergraduate major, although female respondents tended to have a more divergent learning style than male respondents. However, several aspects of the study contradict Kolb's generalizations, and his theoretical construct and the LSI seem to have limited practical implication due to their failure to discriminate various factors involved in career choice and other related issues. (32 references) (CGD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED307892

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

LEARNING STYLES OF ACADEMIC LIBRARIANS AND IMPLICATION FOR PROFESSIONAL DEVELOPMENT

JIN M. CHOI
ASSISTANT PROFESSOR
COLLEGE OF LIBRARY AND INFORMATION SERVICES
UNIVERSITY OF MARYLAND
COLLEGE PARK, MD 20742

NANCY WASHINGTON
ASSISTANT DIRECTOR
LIBRARY PROCESSING CENTER
UNIVERSITY OF SOUTH CAROLINA

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Jin M. Choi

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

IR053 747

BEST COPY AVAILABLE

Abstract

Characteristics of learning styles of 140 academic librarians in public and technical services were examined based on Kolb's Learning Style Inventory (LSI). The most common learning styles among academic librarians were found to be the assimilator (38.6%) and the converger (27.1%), indicating their strengths in abstract conceptualization. Contrary to folklore in the field, the learning styles of technical and public services librarians show no statistically significant difference. No statistical significant relationships between learning styles and other variables such as sex, age group, undergraduate major, and length of professional experience are found. Finally, the survey results on job satisfaction and continuing education are discussed.

Note: This research was possible by a Faculty/Librarian Cooperative Research Grant of the Council on Library Resources. Statements made and views expressed are the responsibility of the authors.

Learning Styles of Academic Librarians and Implication for Professional Development

Introduction

As the social and technological environment of libraries change rapidly, so also has the nature of library services and professional practices. Development of new information technologies seems to be the single most important agent of change and to have had profound impact upon the library and information professionals. Although we do not have empirical data to assess the impact of such change, nor to predict the future of our profession, what seems evident is that the current situation requires reorganization in libraries, changes in staff, and demands new knowledge and skills from professional librarians. Continuing education seems to be the most logical coping mechanism for such change.

Unfortunately, in attempts to manage this change in libraries through professional development, library administrators seem to operate based on rules of thumb rather than upon a solid knowledge of the individual needs of the professionals. For example, it is frequently mentioned in the literature that the application of technology -- such as integrated library automation -- will alter the traditional division between technical and public services [1-3]. At the

same time, it is asserted that "individual librarians are not as interchangeable within libraries as most administrators would like to assume" [4]. In addition, there has been a long-standing belief about the dichotomy between technical and public services, such as the "backroom/frontroom library mentality"[5]. It was commonly assumed that librarians in technical services are "different" from those in public services, in that those in technical services tend to be more analytical and oriented toward things while those in public services are more oriented toward people. However, these assumptions have never been tested, and library administrators do not seem to have adequate knowledge about whether there are any real differences between these two types of librarians. We simply do not know how to accomplish the most effective match between individuals and work assignments in order to fulfill both individual and organizational needs. Nor do we know how to provide avenues of career development that promote utilization of human resources in the most effective way within the profession. Library administrators are not alone in this dilemma, library and information science educators seem to encounter more barriers than solutions in their attempt to be proactive in coping with the needs of practitioners. Martin and Doggan [6] identified four barriers to providing continuing education, and Sheldon concluded in 1988 that the barriers identified by Martin and Doggan in 1975 are still "alive and

well". Two out of four barriers were that "the methodology of continuing education varies greatly from traditional classroom teaching and requires speical competence and commitment; and subject areas needed are often outside the traditional field of library schools"[7]. It is quite appparent that the educators do not seem to have precise ideas about the most needed subject areas for continuing education and their preferred instructional methods.

Perhaps it is time for us to take a close look at individual differences in learning styles or cognitive styles of practicing librarians in order to see if they can shed light on issues concerning career development, continuing education, instructional design, and job satisfaction.

A literature survey of the last twenty years demonstrates that research interest in cognitive and learning styles in the field of library and information science has increased gradually. Research interest in this area has been drawn from two perspectives: One group of researchers, e.g. Saracevic, et al. [8], Borgman [9], Bellardo [10], Elkerton and Williges [11], Sitton and Chmelir [12], and Woelfl [13] investigated cognitive styles or learning styles as a way to understand individual differences in performance in using computers; the other group of researchers, e.g. Stein, et al. [14], Stein and Totten [15],

McIntire and McIntire [16], Johassen and Hodges [17], Johnson and White [18], and Varlejs [19], examined cognitive styles or learning styles of students enrolled in library and information science programs concerning career counseling. However, knowledge about the learning styles of practicing professional librarians seems to be inadequate. In this context, the purposes of this study are (1) to identify the predominant learning style of academic librarians working in public and technical services; (2) to determine if the learning styles of academic librarians working in public services and technical service are significantly different; (3) to assess the relationships between learning styles and other variables, such as sex, age group, undergraduate major, length of professional experience; and (4) to survey on job satisfaction, subject areas of continuing education desired, instructional methods preferred, and the nature of the profession that is liked or disliked most.

Theoretical Framework: Kolb's Experiential Learning Theory

The theoretical framework of this study is based on David Kolb's experiential learning theory [20-22] and the Learning Style Inventory [23-24]. Kolb's model conceptualizes the learning process as a four-stage cycle and identifies four different learning styles. Kolb's learning cycle includes

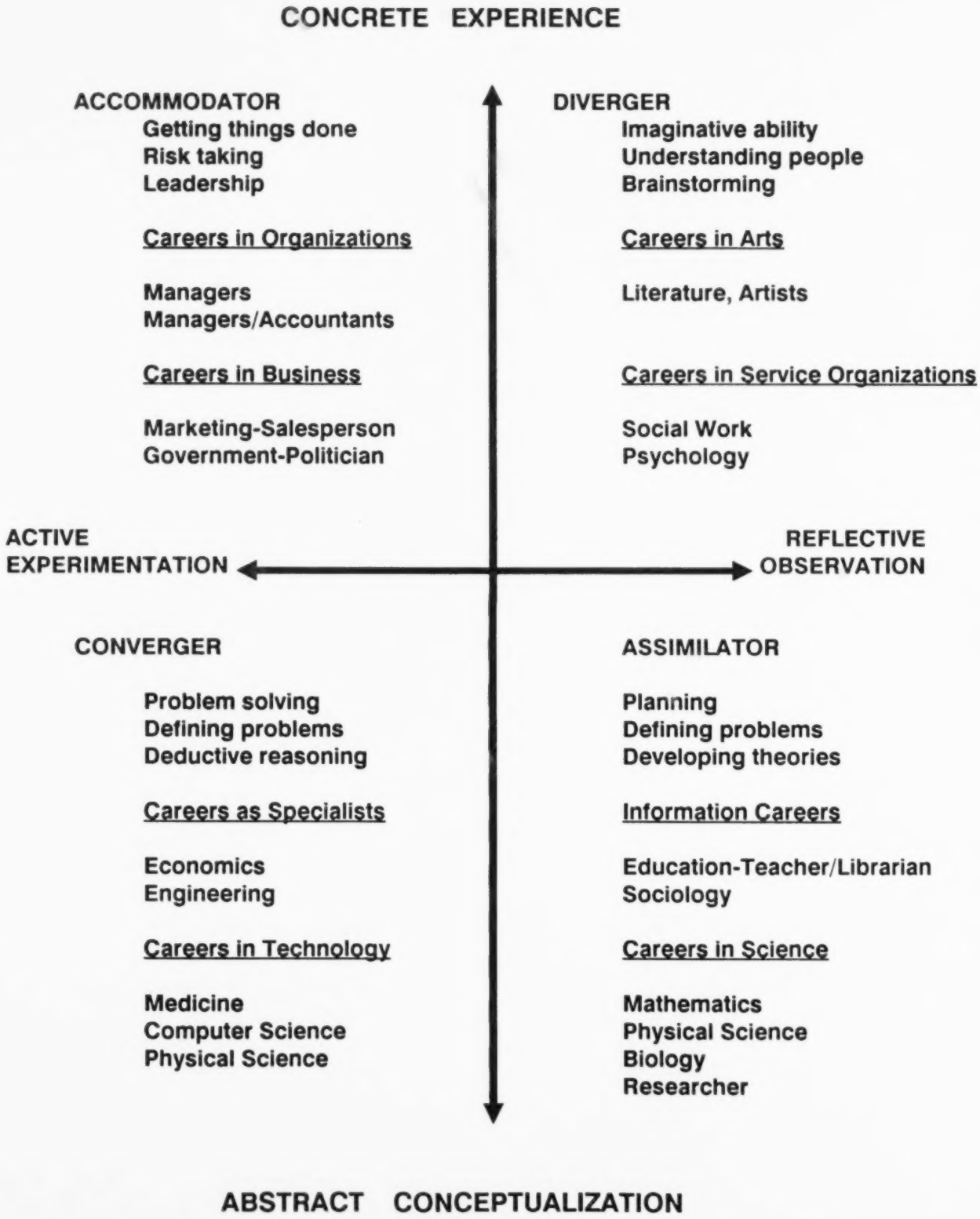
CONCRETE EXPERIENCE
ACCOMMODATOR
Getting things done
Risk taking
Leadership
Careers in Organizations
Managers
Managers/Accountants
Careers in Business
Marketing-Salesperson
Government-Politician
DIVERGER
Imaginative ability
Understanding people
Brainstorming
Careers in Arts
Literature, Artists
Careers in Service Organizations
Social Work
Psychology
ACTIVE EXPERIMENTATION
REFLECTIVE OBSERVATION
CONVERGER
Problem solving
Defining problems
Deductive reasoning
Careers as Specialists
Economics
Engineering
Careers in Technology
Medicine
Computer Science
Physical Science
ASSIMILATOR
Planning
Defining problems
Developing theories
Information Careers
Education-Teacher/Librarian
Sociology
Careers in Science
Mathematics
Physical Science
Biology
Researcher
ABSTRACT CONCEPTUALIZATION

Figure 1

Concrete Experience(CE), Reflective Observation(RO), Abstract Conceptualization(AC) and Active Experimentation(AE), which suggests that one learns from concrete experience, then concrete experience forms the basis for observation and reflection, which in turn leads to formation of abstract concepts and generalizations. This formation of concepts and generalizations then guides the choice of new experience. However, Kolb recognized two dialectic dimensions of the learning process: i.e., the concrete/abstract (AC-CE) and the active/reflective (AE-RO) dimensions. According to Kolb, in the process of learning, we tend to resolve this dialectic tension by accentuating one ability over the other. Thus, learning styles represent an individual's learning preference between these two dimensions. As a result, there are four learning styles (or learning style quadrants). They are : the Converger, the Diverger, the Assimilator, and the Accommodator, as shown in Figure 1. To be specific, the Converger tends to prefer abstract and active learning modes. Kolb found that convergers tend to have strengths in the practical application of ideas, and they tend to be unemotional, preferring to deal with things rather than people. This learning style is typical of individuals with engineering and the physical science backgrounds. On the other hand, Divergers are the opposite of convergers in that they tend

to prefer reflective and concrete learning modes and they tend to be emotional and interested in people. This style is characteristic of people with humanities and liberal arts backgrounds. Assismilators prefer abstract and reflective learning modes and they are less interested in people and are also less concerned with the practical use of theories. Kolb found that individuals with science careers or information careers such as teacher, librarian, minister, or college professor, tend to have assimilative learning style. Accommodators are the opposite of assimilators in that their strengths lie in concrete experience and active experimentation. Accommodators are good at carrying out plans, tend to be risk-takers and are commonly found among people with business and management background [25].

Interestingly, however, Kolb pointed out that learning styles are adaptive in that they can be modified and accentuated in a way to match between individual characteristics and environmental demands. Kolb further stated that such match comes about in two ways either environments tend to engender changes in individual characteristics to fit them, or individuals tend to select themselves into environments that are consistent with their personal characteristics. Based on this conceptual framework, Kolb devised an instrument, called the Learning Style Inventory, to map one's learning style into the learning style

quadrants (i.e. converger, diverger, etc.). Basically, Kolb's study lead him to generalize that individuals who are in the similar career tend to have a similar learning style, and the deviation from the career path takes place if there exists mismatch between individual characteristics and career environment. To simplify a bit, one of the underlying implications of Kolb's theory is that one can identify the predominant learning style of a group of people in a certain field, which then can be used as a basis to guide career choice, career development, instructional design among others.

Methodology

The Learning Style Inventory 1985 (LSI) and a supplementary questionnaire were used to obtain data on learning styles and other individual attributes. Survey instruments were distributed to 200 librarians working in Technical Service and Public Service (100 for each group) of twenty member-libraries of the Association of Research Libraries (Appendix B). A total of 148 (74%) of those surveyed returned the materials.

The LSI generates six scores, i.e. four basic and two combination scores. The four basic scores are the sum of ranking scores (between one and 4) for each of the four categories, i.e., concrete experience (CE), reflective observation (RO), abstract conceptualization (AC) and active experimentation (AE),

TABLE 1

SURVEY RESPONSE

	# Distributed	# Returned	# Completed
Technical Services	100 (50%)	73 (51%)	73 (52%)
Public Services	100 (50%)	75 (49%)	67 (48%)
Total	200 (100%)	148 (100%)	140 (100%)

TABLE 2

PROFILE OF RESPONDENTS

SEX		
Male	48	(34.3%)
Female	92	(65.7%)
AGE GROUP		
< 30	13	(9.3%)
30-40	54	(38.6%)
40-50	54	(38.6%)
>50	19	(13.6%)
LENGTH OF EXPERIENCE		
1-5 years	40	(28.6%)
5-10 years	25	(17.9%)
10-15 years	32	(22.9%)
>15 years	43	(30.7%)
UNDERGRADUATE MAJOR		
Humanities	101	(72.1%)
Social Science	31	(22.1%)
Science	7	(5.0%)

and two combination scores reflect one's preference on the two dialectic dimensions and are obtained by AC-CE and AE-RO. Then, learning style quadrants were determined by plotting the two combination scores on the learning style grid.

Data on demographic variables, such as sex, age, undergraduate major and length of professional experience, were obtained by the supplementary questionnaire.

Results

Profile of Respondents

Out of 148 respondents, eight returned either incomplete or unusable LSI and were subsequently eliminated. Out of 140 returns, 73 (52%) were from Technical Services, 67(48%) were from Public Services (Table 1). As shown in Table 2, all in all, the major characteristics of the respondents were, as expected, that they were female, between thirty and fifty years of age, had majored in the Humanities and had a varying range of professional experiences.

Predominant learning style among academic librarians

The most common learning style among the academic librarians surveyed was found to be the assimilator (38.6%) followed by the converger (27.1%), the diverger (19.3%), and the accommodator (15%) respectively. As stated above, assimilators tend to prefer

reflective and abstract modes of learning and convergers prefer active and abstract modes of learning. Thus one can safely state that a majority of acadenmic librarians tend to prefer or have strength in abstract conceptualization. Kolb described assimilators as individuals who are "best at understanding a wide range of information and putting it into concise, logical form, and they are less focused on people and more interested in abstract ideas and concepts" [26] and continue to generalize that this learning style is typical of individuals in science careers or information careers such as teacher, librarian, writer, or college professors.

Given the nature of the profession, it is not surprising that academic librarians tend to have assimilative and convergent learning styles. While the fact that the assimilative learning style is the most common among academic librarians is consistent with Kolb's finding, what is interesting and contrasting with Kolb's generalization, that undergraduate major is one of the most influential factors determining one's learning style and individuals with a humanities and liberal arts background tend to have divergent learning style, is that the majority (72.1%) of the respondents here had a humanities or liberal arts background; yet their learning styles do not seem to conform to the expected norm, i.e. divergent learning style, instead they showed strong

TABLE 3

COMPARISON OF LEARNING STYLE QUADRANTS BY SPECIALTIES

	LEARNING STYLES			
	DIVERGER	ACCOMMODATOR	ASSIMILATOR	CONVERGER
TECHNICAL SERVICES				
Frequency	11	11	30	21
Percent	7.9%	7.9%	21.4%	15%
PUBLIC SERVICES				
Frequency	16	10	24	17
Percent	11.4%	7.1%	17.1%	12.1%
TOTAL				
Frequency	27	21	54	38
Percent	19.3%	15.0%	38.6%	27.1%

Chi-square = 7.815 (critical); Degrees of freedom = 3; p.05

Chi-square = 1.807 (observed)

TABLE 4

COMPARISON OF MEAN LSI SCORES BY SPECIALTIES

	Learning Style Scores					
	AE	CE	RO	AC	AE-RO	AC-CE
TECHNICAL SERVICES						
X	31.9	23.4	29.7	34.2	2.2	10.9
S.D.	8.5	8.6	7.5	9.4	12.6	15.4
(N = 73)						
PUBLIC SERVICES						
X	31.5	24.6	29.7	32.9	1.8	8.3
S.D.	9.1	7.8	8.2	9.3	15.7	15.3
(N = 67)						
TOTAL						
X	31.7	24.0	29.7	33.6	2.0	9.7
S.D.	8.8	8.2	7.8	9.3	14.1	15.4
(N = 140)						
F	0.13	0.71	0.00	1.51	0.79	0.06

N-Sample Size; X-Mean; S.D.-Standard Deviation

F = 3.841; Degrees of freedom = 1, 137; p.05

preference toward convergent or assimilative learning styles. It is rather difficult to speculate on the reasons that account for such discrepancy based on the given data. However, if indeed Kolb's generalization is valid, one could speculate that among the respondents, one of two things might have happened: either the individuals left the field of their undergraduate major and chose librarianship among the alternatives since it is consistent with their learning style, or, the nature of the profession, once they entered it, tended to stress abstract conceptualization (which is the common denominator of assimilators and convergers) and thus the individual learning styles were modified toward a match with the learning ability emphasized by the profession. Yet, it is only a speculation and requires further investigation. What is evident here is that academic librarians seem to prefer or have strengths in abstract conceptualization.

Difference among learning styles of academic librarians specializing in Technical Services and Public Services

In contrast to widely held beliefs in the field, public services librarians and technical services librarians showed no statistically significant difference in their learning style distributions. These two groups seem to be quite homogeneous and showed a great deal of similarity in their learning style distributions. As shown in Tables 3 and 4, both the Chi-square

test on the distribution of learning style quadrants and the one-way ANOVA test on the mean LSI scores by specialties yielded no statistically significant difference between the groups. It is rather puzzling in that Kolb[27] and others [28-29] found that learning styles do differ among the specialty groups within the field as, for instance, in Medical science or Business. Again, it remains unclear what accounts for this inconsistencey. However, one can speculate two explanations: one would be that academic librarians are indeed a homogenous group; the other would be that Kolb's LSI might not be sensitive enough to detect the differences between sub-groups, while it is able to differentiate groups that are profoundly different as also indicated in Wunderlich and Gjerde[30].

However, if Kolb's theory hold true, then the accommodators in this survey would be the most likely group to find conflicts between their choice of career and their learning styles and an ideal solution would be to guide their career development more toward adminstration or managerial assignment. However, this is an open question and requires more in-depth study.

What is clear here is that academic librarians in technical and public services are similar in terms of the distribution of their learning styles, a finding that contradicts the popular perception of the dichotomy between the groups. Thus one might safely assume individuals could probably work well in either

TABLE 5

COMPARISON OF LEARNING STYLE QUADRANTS BY SEX, AGE GROUP, LENGTH OF EXPERIENCE AND UNDERGRADUATE MAJORS

	N	Learning Styles			
		Diverger	Accommodator	Assimilator	Converger
SEX					
Male	48	4 (8.3%)	9 (18.8%)	23 (47.9%)	12 (25%)
Female	92	23 (25%)	12 (13%)	31 (33.7%)	26 (28.3%)
Chi-square=7.005	p=0.072		3 d.f.		
AGE GROUP					
<30	13	3 (23.1%)	2 (15.4%)	5 (38.5%)	3 (23.1%)
30-40	54	9 (16.7%)	7 (13%)	21 (38.9%)	17 (31.5%)
40-50	54	14 (25.9%)	8 (14.8%)	19 (35.2%)	13 (24.1%)
>50	19	1 (5.3%)	4 (21.1%)	9 (47.4%)	5 (26.3%)
Chi-square=5.266		p=0.811	9 d.f.		
LENGTH OF EXPERIENCE					
1-5 yrs	40	11 (27.5%)	6 (15%)	15 (37.5%)	8 (20%)
5-10 yrs	25	4 (16%)	3 (12%)	10 (40%)	8 (32%)
10-15 yrs	32	6 (18.8%)	3 (9.4%)	14 (43.8%)	9 (28.1%)
>15 yrs	43	6 (13.4%)	9 (20.9%)	15 (34.9%)	13 (30.2%)
Chi-square=5.542		p=0.785	9 d.f.		
UNDERGRADUATE MAJOR					
Humanities	101	18 (17.8%)	18 (17.8%)	37 (36.6%)	28 (27.7%)
SocScience	31	8 (25.8%)	2 (6.5%)	11 (35.5%)	10 (32.3%)
Science	7	1 (14.3%)	1 (14.3%)	5 (71.43%)	0 (0.0%)
Chi-square=8.873	p=0.449		9 d.f.		

Chi-square=7.815(critical); Degrees of freedom=3; p<.05

Chi-square=16.919(critical); Degrees of freedom=9; p<.05

speciality provided that appropriate knowledge, skills and attitude are acquired and updated.

Relationships among learning styles and other variables

As shown in Table 5, Chi-square tests of learning styles by sex, age group, length of experience and undergraduate major were performed. Although Kolb[31-32] found that learning styles differ by sex, age group, and undergraduate major, no statistically significant differences were found between the learning styles by gender, age group, length of experience or undergraduate major. However the data hint that more female respondents (25%) tend to have a more divergent learning style than male respondents (8.3%) do, and also indicate that as the length of experience increases, the convergent learning style tends to strengthen while the divergent learning style tends to weaken. Again, it might be that the nature of the profession shapes one's learning style more toward abstract conceptualization, and less toward concrete experience. In other words, the profession seems to demand strengths in abstract conceptualization so that an individual librarian's learning style is modified in that direction over time. Table 6 is a summary of mean LSI scores by sex, age group, length of experience and undergraduate major. When one-way ANOVA tests were performed, the mean score of abstract conceptualization

TABLE 6

COMPARISON OF MEAN LSI SCORDS BY SEX, AGE GROUP, LENGTH OF EXPERIENCE AND UNDERGRADUATE MAJORS.

		Learning Style Scores					
	N (%)	AE	CE	RO	AC	AE-RO	AC-CE
SEX							
Male	48 (34.3)	30.8	24.0	28.4	36.0	2.4	12.0
Female	92 (65.7)	32.2	24.0	30.4	32.4	1.8	8.4
F		0.6	0.0	2.2	4.2*	0.1	1.4
AGE GROUP							
<30	13 (9.3)	33.7	22.2	30.6	32.8	3.1	10.6
30-40	54 (38.6)	31.8	25.1	28.3	34.0	3.4	9.0
40-50	54 (38.6)	31.5	23.8	30.6	33.2	0.8	9.4
>50	19 (13.6)	30.8	22.3	30.3	34.0	0.6	11.7
F		0.3	5.3*	0.9	0.2	0.3	0.2
LENGTH OF EXPERIENCE							
1-5 yrs	40 (28.6)	31.3	26.8	29.4	31.5	1.9	4.8
5-10 yrs	25 (17.9)	31.4	23.2	27.6	36.8	3.8	13.6
10-15 yrs	32 (22.9)	31.8	23.0	29.6	34.4	2.1	11.4
>15 yrs	43 (30.7)	32.2	22.4	31.2	33.0	1.0	10.6
F		0.2	2.2	1.1	2.0	0.2	2.1
UNDERGRADUATE MAJOR							
Humanities	101 (42.1)	31.6	24.1	29.0	34.2	2.6	10.0
Soc. Science	31 (22.1)	33.8	23.4	30.4	32.3	3.4	8.9
Science	7 (5.0)	26.4	24.2	36.0	28.7	-9.6	4.9
F		2.2	0.1	2.8	1.5	2.7	0.5

F=3.841; Degreees of freedom=1, 137; p<.05

*Statistically significant

varies significantly by sex and the mean score of concrete experience varys significantly among age groups. No significant difference was found between mean LSI scores and length of experience or undergraduate major.

Survey on Job Satisfaction and Continuing Education

The final part of the study addresses the question as to whether learning styles of academic librarians have any bearing on their job satisfaction and their needs for continuing education. However, the survey data clearly ruled out the possibility of such linkages; thus what follows is the summary of responses to the four open-ended questions concerning job satisfaction and continuing education (Questions no. 4 - 8 in Appendix A). Out of 148 responses, 145 were complete and analysed here. Since the questions were being open-ended, many replies listed multiple answers for each question thus, there are more answers than there are participants.

As far as job satisfaction is concerned, the academic librarians from both technical and public services in this study were overwhelmingly content with the nature of their profession: sixty nine out of seventy two (96%) technical services librarians and sixty six out of seventy three (90%) public services librarians indicated satisfaction with their profession. When they were asked about major sources of job satisfaction or

TABLE 7:

SOURCES OF JOB SATISFACTION

	Technical Services	Public Services	Total
1. Intellecutally Stimulating Environment	61	56	117
2. Organization and Preservation of Knowledge	39	20	59
3. New Problem Solving via Automation	34	25	59
4. Service to Patrons	19	50	69
5. Diversity of Duties	9	32	41

TABLE 8

SOURCES OF DISSATISFACTION

	Technical Services	Public Services	Total
1. Unrealistic Demand & Too many routines	2	6	8
2. Mediocracy of co-workers	2	5	7
3. Low Salary and Status & Insufficient Support	1	5	6
4. Technology Hype	0	2	2
5. Others Oppressive bureaucracy Reactive nature of reference work, etc.	0	4	4

dissatisfaction, their responses were multiple, diverse and well-versed; however, they were collapsed into the five general categories as shown in Table 7. As might be expected from people who inhabit the world of academe, academic librarians unanimously mentioned the intellectually stimulating environment as the most satisfying aspect of their profession. Technical services librarians and public services librarians reponded rather differently to the remaining categories for some obvious reasons. Technical services librarians mentioned organization and preservation of knowledge is the next most satisfying aspect of the profession followed by new problem solving via computer application, service to patrons and diversity of duties, respectively, while public services librarians rated service to patrons as the second most rewarding aspect of the profession followed by diversity of duties, new problem solving via computer application and organization and preservation of knowledge, respectively.

The sources of dissatisfaction of the few unhappy respondents are as diverse as the sources of satisfaction (Table 8). They listed unrealistic demands on time and energy and too many trivial routines, low salary and status and insufficient support, and mediocracy of co-workers as the most dissatisfying aspects of the profession.

In response to the questions concerning continuing

TABLE 9

SUBJECT AREAS OF INTEREST FOR CONTINUING EDUCATION

	Technical Services	Public Services	Total
1. Library & Information Science			(52%)
a. Computer Application	30	29	59
b. Management	22	18	40
c. Research Skills	4	4	8
d. Others	10	19	29
Total	66	70	136
2. Humanities & Liberal Arts			(33%)
a. Languages	14	23	37
b. History	7	11	18
c. Literature	5	7	12
d. Philosophy & Religion	3	7	10
e. Others	6	4	10
Total	35	52	87
3. Social Sciences			(11%)
	20	8	28
4. Sciences			(3%)
	6	3	9
Total	127	133	260

TABLE 10

INSTRUCTIONAL METHODS PREFERRED

	Technical Services	Public Services	Total
1. Workshop	35	35	70
2. Lecture	28	28	56
3. Group Discussion	20	26	46
4. Independent Reading	19	19	38
5. Demonstration	15	15	30
6. Case Study	9	9	18
7. Others	6	3	9

education, academic librarians surveyed in this study expressed a wide range of interests in as many as fifty different subject areas. For convenience, subject areas were grouped into library and information science, humanities , social sciences and science. As shown in Table 9, the greatest demand for continuing education is in library and information science (52%), followed by humanities(33%) , social sciences (11%) and science (3%) respectively. Within the library and information science category, academic librarians in this survey felt most keenly the need to learn more about computer applications in libraries and management skills. As for subject areas outside library and information science, the most conspicuous demand was expressed in foreign languages. In terms of instructional methods preferred for continuing education, academic librarians in this survey expressed clear preference for workshops followed by lectures, group discussion, independent reading and demonstration (Table 10).

Conclusion

It is quite common that most of professional schools do use some sort of inventory for the purpose of career couseling. And, the prerequisite for that is to collect data on cognitive style or learning style and also data on the related variables that typifies the group of practitioners in a field. This study identified the predominant learning style af academic librarians

to be the Assimilative followed by Convergent learning styles. It also proves that academic librarians in public and technical services have very similar learning style preferences. However, several aspects of the study contradict Kolb's generalizations and learning styles do not seem to bear any meaningful implication for career counseling, continuing education, job satisfaction and instructional design, which in turn, call for further scrutiny on the sensitivity of the LSI. Until then, Kolb's theoretical construct and the LSI seem to have limited practical implication due to the failure to discriminate various factors involved in career choice and other related issues.

Appendix A: A Supplementary Questionnaire

Please complete the following questionnaire by placing a check mark in the bracket beside the appropriate answer or by writing brief answers for the open ended questions

1. Indicate the area of library service that you are currently working in.

   [ ] Technical Services [ ] Public Services

   [ ] Other (Please Specify _____)

2. Indicate the length of your professional library work experience.

   [ ] 1-5 yrs [ ] 5-10 yrs [ ] 10-15 yrs [ ] more than 15 yrs

3. When you consider only the nature of your profession excluding all of the environmental factors such as salary, promotion, management style, etc., are you satisfied with your profession?

   [ ] Yes [ ] No

4. If YES, Could you explain why? In other words, explain what you like most about your profession (excluding the environmental factors).

5. If NO, Could you explain why? In other words, explain what you dislike most about your profession (again, excluding the environmental factors).

6. If NO, What would you consider as the solutions to your current state of dissatisfaction with your profession?

7. If you were given an opportunity to take continuing education courses, which subject areas would interest you most?

8. In relation to question #7 above, which of the following instructional methods do you prefer most?

[ ] Lecture [ ] Group Discussion [ ] Case Study

[ ] Workshop [ ] Demonstration [ ] Independent Reading

[ ] Other (Please Specify) _____

9. We would like to know the following:

Gender [ ] Male [ ] Female

Age [ ] below 30 [ ] 30-40 [ ] 40-50 [ ] above 50

Undergraduate major: _____

Advanced degrees earned other than MLS:

_____

THANK YOU VERY MUCH FOR YOUR COOPERATION.

Appendix B: List of Academic Libraries Selected for the Study

Sample libraries selected for the study based on the random, systematic, stratified sampling methods are listed as follows:

Yale	Kansas
Texas	Connecticut
Rutgers	Syracuse
Chicago	Vanderbilt
Pensylvania	Kentucky
Virginia	SUNY-Stony Brook
Northwestern	University of South Carolina
California-Santa Barbara	Queen's
Michigan State	Georgia Tech
California-Irvine	Oklahoma State

Bibliography

1. Gregor A. Preston "How Will Automation Affect Cataloging Staff ?" Technical Services Quarterly 1:129-36 (1983).

2. Maurice J. Freedman "Automation and the Future of Technical Services" Library Journal 109:1197-203 (Jun. 1984).

3. Thomas W. Shaughnessy "Technology and the Structure of Libraries" Libri 32(2):149-55, 1982.

4. Susan K. Martin "The Impact of Technology on Libraries and Librarians: A Literature Review" The Information Society: Issues and Answers edited by E.J. Josey Phoenix, AZ: Oryx Pr., 1978. p. 116.

5. Patricia G. Schuman "Library Networks: A Means, Not an End" Library Journal 112:33-7 (Feb. 1987).

6. Allie B. Martin and Maryann Duggan Continuing Education for Library Staffs in the Southwest Austin: Univ. of Texas, Graduate School of Library and Information Science. 1975 p.36.

7. Brooke E. Sheldon The Role of the Library School in Continuing Education As Perceived by Deans [Preprint] p.8.

8. Tefko Seracevic and Paul Kantor "A Study of Information Seeking and Retrieving. III. Searchers, Searches, and Overlap," Journal of the American Society for Information Science 39(3):197-216 (1988).

9. Christin L. Borgman "Individual Differences in the Use of Information Retrieval Systems: A Pilot Study" Proceedings of the 49th Annual Meeting of the American Society for Information Science Medford, NJ:Learned Information, 1986, p.20-31.

10. Trudi Bellardo "An Investigation of Online Searcher Traits and Their Relationship to Search Outcome" Journal of the American Society for Information Science 36(4):241-50, (1985).

11. J. Elkerton and R.C. Williges "Evaluation of Expertise in a File Search Environment" Proceedings of the Human Factors Society 27th Annual Meeting edited by A.T. Pope and L.D. Haugh. Santa Monica, CA: Human Factors Society, 1983, p.521-25.

12. S. Sitton and G. Chmelir "The Intuitive Computer Programmer" Datamation 30(16):137-41, (1985).

13. N. N. Woelfl Individual Differences in Online Search Behavior: The Effect of Learning Styles and Cognitive Abilities on Process and Outcome Ph.D. dissertation, Case Western University, Cleveland, Ohio, 1984.

14. B. L. Stein, et. al. "Understanding Preferred Cognitive Styles - A Tool for Facilitating Better Communication" Journal of Education for Library and Information Science 27(1):38-43 (1983).

15. B.L. Stein and H.L. Totten "Cognitive Styles: Similarities among Students" Journal of Education for Librarianship 24: 38-49 (1983).

16. S.J. McIntire and C.L. McIntire "A Career Counseling Model Based on Cognitive Style Assessment" Journal of Education for Librarianship 20:198-210 (1980).

17. D. H. Jonassen and G.G. Hodges "Student Cognitive Styles: Implications for Library Educators" Journal of Education for Librarianship 22:143-53 (1982).

18. Kerry A. Johnson and Marilyn D. White "The Field Dependence/Field Independence of Information Professional Students" Library Research 3:355-69 (1981).

19. Jana Varlejs "Learning Styles of Librarians and Satisfaction with Continuing Education Activities: Looking For a Match" Continuing Education: Issues and Challenges edited by Esther E. Horne New York: K.G. Saur, 1985, p.131-39.

20. David A. Kolb Experiential Learning Theory: Experience as the Source of Learning and Development Englewood, NJ: Prentice-Hall, 1984.

21. David A. Kolb "Management and the Learning Process" California Management Review 18(3):21-31 (1976).

22. David A. Kolb and Mark S. Plovnik "The Experiential theory of Career Development" Organizational Careers: Some New Perspectives edited by John Van Maanen Chichester: John Wiley & Sons, 1978, p.65-87.

23. David A. Kolb The Learning Style Inventory revised edition. Boston: McBer & Co., 1985.

24. David A. Kolb Learning Style Inventory 1985: Technical Specifications Boston: McBer & Co., 1985.

25. David A. Kolb Learning Style Inventory : Self-scoring Inventory and Interpretation Booklet Boston: McBer & Co., 1985

26. Ibid. p.7

27. David A. Kolb and Mark S. Plovnik "Experiential Theory of Career Development," Organizational Careers: Some New Perspectives

28. Georgia R. Sadler et al. "Learning Styles and Teaching Implications" Journal of Medical Education 53:847-49, 1978

29. Mark Plovnick "Primary Care Career Choices and Medical Student Learning Styles" Journal of Medical Education 50:849-55, 1975.

30. Roger Wunderlich and Craig L. Gjerde "Another Look at Learning Style Inventory and Medical Career Choice" Journal of Medical Education 53:45-54, 1978

31. David A. Kolb Experiential Learning Theory: Experience as the Source of Learning and Development

32. David A. Kolb Learning Style Inventory 1985: Technical Specifications